**Macfarlane GJ, Hunt IM, Silman AJ. Role of mechanical and psychosocial factors in the onset of forearm pain: prospective population based study. BMJ 2000;321:1-5.**

Design: Prospective cohort study

Population/sample size/setting:

- 1953 participants age 18 to 65 who were randomly selected from the register of a general practice near Manchester, UK
- Of these 1953 participants, 1260 who were free of forearm pain at baseline completed and returned questionnaires on a follow-up survey two years later

Main outcome measures:

- Forearm pain was counted as being present if it had occurred during the previous month and had lasted at least one day
- For each participant who reported forearm pain, occupational exposures were elicited by questionnaire, with the exposures defined as those carried out at the time of onset of pain
- Participants who did not develop forearm pain were asked about occupational exposures based on dummy dates which were chosen at random from the distribution of dates of onset of those who did report forearm pain
- There were 105 participants with forearm pain at follow-up; only 42 (40%) were employed at the time of onset of pain
- Of the 1155 participants without forearm pain at follow-up, 740 (64%) were employed at the time of their dummy date for ascertainment of occupational activities
- Mechanical factors with elevated risks for forearm pain were repetitive movements of the arms (RR=4.1) and repetitive movements of the wrists (RR=3.4) for half or most of the work time
- Low satisfaction with support from job supervisor or colleagues also had an elevated risk for forearm pain (RR=4.7)
- Other musculoskeletal pain symptoms were associated with elevated risks of forearm pain: back pain (RR=2.8), shoulder pain (RR=2.1), and widespread chronic pain (RR=2.6)
- High scores on illness behavior (an increased tendency to seek care when having symptoms) also showed elevated risks for forearm pain (RR=3.8)
- These variables remained significant in a multivariable Cox regression model; high illness behavior score had an even higher RR (6.6) than when illness behavior was analyzed alone

Authors' conclusions:

- High levels of psychosocial distress (dissatisfaction with support) in the workplace predicts the onset of forearm pain
- Work-related repetitive arm movements for more than half the time also predict forearm pain

- Other somatic pain problems independently predict the onset of forearm pain, which may be one feature of a wider process of somatization
- Forearm pain is multifactorial in nature, and terms such as “cumulative trauma disorder,” which imply a single cause, should be avoided

Comments:

- Some aspects of the data analysis are very unclear
- For example, the follow-up questionnaire was mailed 2 years after the baseline data for this population was obtained, and the presence of forearm pain was determined by the answer to a question about whether it had occurred in the previous month and had lasted one day
- This seems to imply that all 105 cases at the end of the study had had forearm pain during the 24$^{th}$ month of the study, but that the pain may have had its onset much earlier, and that the risk factors at the time of onset may have depended on circumstances that could have been present up to 23 months earlier
- The effect of relying on recall to this extent could be difficult to predict
- Forearm pain that occurred and then remitted would be counted if it were not present at the time of the 24 month questionnaire
- There is a large unexplained discrepancy between the employment rate of the participants with forearm pain (40%) and without pain (64%)
- If a large number of participants left the workplace because of forearm pain which then remitted, they would be counted as non-cases of pain
- The true effect of workplace exposures could be greater than was estimated by the final analyses if ceasing work led to remission of forearm pain
- The study would still lend support to the hypothesis that repetitive movement of the arm for half the time is a risk factor for forearm pain
- Nothing can be concluded about specific forearm pain conditions from this study

Assessment: Adequate for evidence that repetitive movement of the arm for 4 hours a day or more is a risk factor for regional forearm pain